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Economic Resources and Children's Health and Success at School An Analysis Using the NLSCY

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by
Lori Curtis and Shelley Phipps
Septembre 2000

Working Paper





**Applied Research Branch
Strategic Policy
Human Resources Development Canada**

**Direction générale de la recherche appliquée
Politique stratégique
Développement des ressources humaines Canada**

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This report is part of a set of research studies on the National Longitudinal Survey of Children and Youth. /
Le présent rapport fait partie d'un ensemble d'études sur l'Enquête longitudinale nationale sur les enfants et les
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Abstract

This paper asks whether economic resources matter for children's outcomes. Both economic theory and public concern over high levels of child poverty suggest that there is an important association. Yet, research utilizing the first wave of the National Longitudinal Survey of Children and Youth (1994) suggested, surprisingly, that low-income status is a relatively unimportant correlate of children's outcomes. If true, the policy implication is that income transfers are relatively unimportant for children.

The goal of this paper is to re-examine the association between economic resources and children's health and success at school, two particularly "economic" outcomes (i.e., key elements of children's "human capital"; both have important implications for children's eventual labour market success). We move beyond *current* income and/or poverty status as a measure of the economic resources available to the child.

Economists would argue that wealth and income flows are also vital components of the economic resources available to a family. As well, traditional economic reasoning also suggests that, income constant, families with more time are better off than those with less. When we control for both housing and available parental time per week, we find that children who live in owner-occupied housing have better outcomes than children who do not; children who live in housing in need of major repairs have worse outcomes. This finding represents an additional channel through which economic resources can influence outcomes for children. Weekly hours of parental time available has no statistically significant association with child health; however, income constant, more hours of parental time available each week significantly improves a child's success at school.

These results indicate that while "longer-term" income is an important factor in child well-being, measured by health and educational success, other measures of economic resources are also important. The policy conclusions associated with "low or moderate association between income and child well-being" may be misleading. Income transfers may have an additional relationship with child well-being if they assist families with children to accumulate assets such as housing or if they increase parental time spent with children. These attributes are associated with better outcomes for children even after controlling for income. Other policy instruments which may improve outcomes are extended parental leave, home ownership assistance plans or assisting low-income families with the completion of housing repairs.

Résumé

L'auteur du présent document se demande si les ressources économiques comptent pour les résultats des enfants. Tant la théorie économique que les préoccupations du public concernant les niveaux élevés de pauvreté chez les enfants laissent supposer qu'il existe un lien important. Cependant, il ressort curieusement de la recherche effectuée en utilisant la première série de résultats de l'Enquête longitudinale nationale sur les enfants et les jeunes (1994) que le fait d'avoir un faible revenu est un corrélat relativement sans importance pour les résultats des enfants. Si cela est vrai, l'incidence sur les politiques générales est que les transferts de revenu sont relativement sans importance pour les enfants.

L'objectif du présent document est de réexaminer le lien entre les ressources économiques et la santé et la réussite scolaire des enfants, qui sont deux résultats particulièrement « économiques » (c.-à-d. des éléments essentiels du « capital humain » des enfants, qui ont tous deux des conséquences importantes pour la réussite éventuelle des enfants sur le marché du travail). Nous allons au-delà du revenu *actuel* et/ou de la pauvreté en tant que mesure des ressources économiques disponibles à l'enfant.

Les économistes soutiendraient que la richesse et les flux de revenu sont également des composantes vitales des ressources économiques disponibles à une famille. En outre, la pensée économique traditionnelle laisse supposer que, à revenu égal, les familles qui disposent de plus de temps s'en sortent mieux que celles qui en ont moins. Lorsque nous tenons compte du logement et du temps que les parents consacrent hebdomadairement à leurs enfants, nous constatons que les enfants qui habitent dans un logement occupé par son propriétaire obtiennent de meilleurs résultats que les autres; les enfants qui habitent dans un logement nécessitant des réparations majeures obtiennent les plus mauvais résultats. Cette constatation représente une voie supplémentaire par laquelle les ressources économiques peuvent influencer sur les résultats des enfants. Il n'existe aucun lien important du point de vue statistique entre le nombre d'heures que les parents consacrent hebdomadairement à leurs enfants et la santé de ceux-ci; toutefois, à revenu égal, lorsque les parents consacrent hebdomadairement plus d'heures à leurs enfants, la réussite scolaire de ceux-ci s'accroît considérablement.

Ces résultats indiquent que, bien que le revenu « à long terme » soit un facteur important du bien-être de l'enfant, mesuré par son état de santé et sa réussite scolaire, d'autres mesures des ressources économiques sont tout aussi importantes. Les conclusions politiques selon lesquelles il existe « un lien faible ou modéré entre le revenu et le bien-être de l'enfant peut être tendancieux. Les transferts de revenu peuvent avoir un lien supplémentaire avec le bien-être de l'enfant », s'ils aident les familles avec enfants à accumuler des biens, comme un logement, ou s'ils accroissent le temps que les parents consacrent à leurs enfants. Ces attributs sont liés aux meilleurs résultats des enfants, même lorsqu'on tient compte du revenu. Les autres instruments de politique qui peuvent améliorer les résultats sont le congé parental prolongé, les régimes d'aide à l'accession à la propriété, ou l'aide aux familles à faible revenu afin de réparer leur logement.

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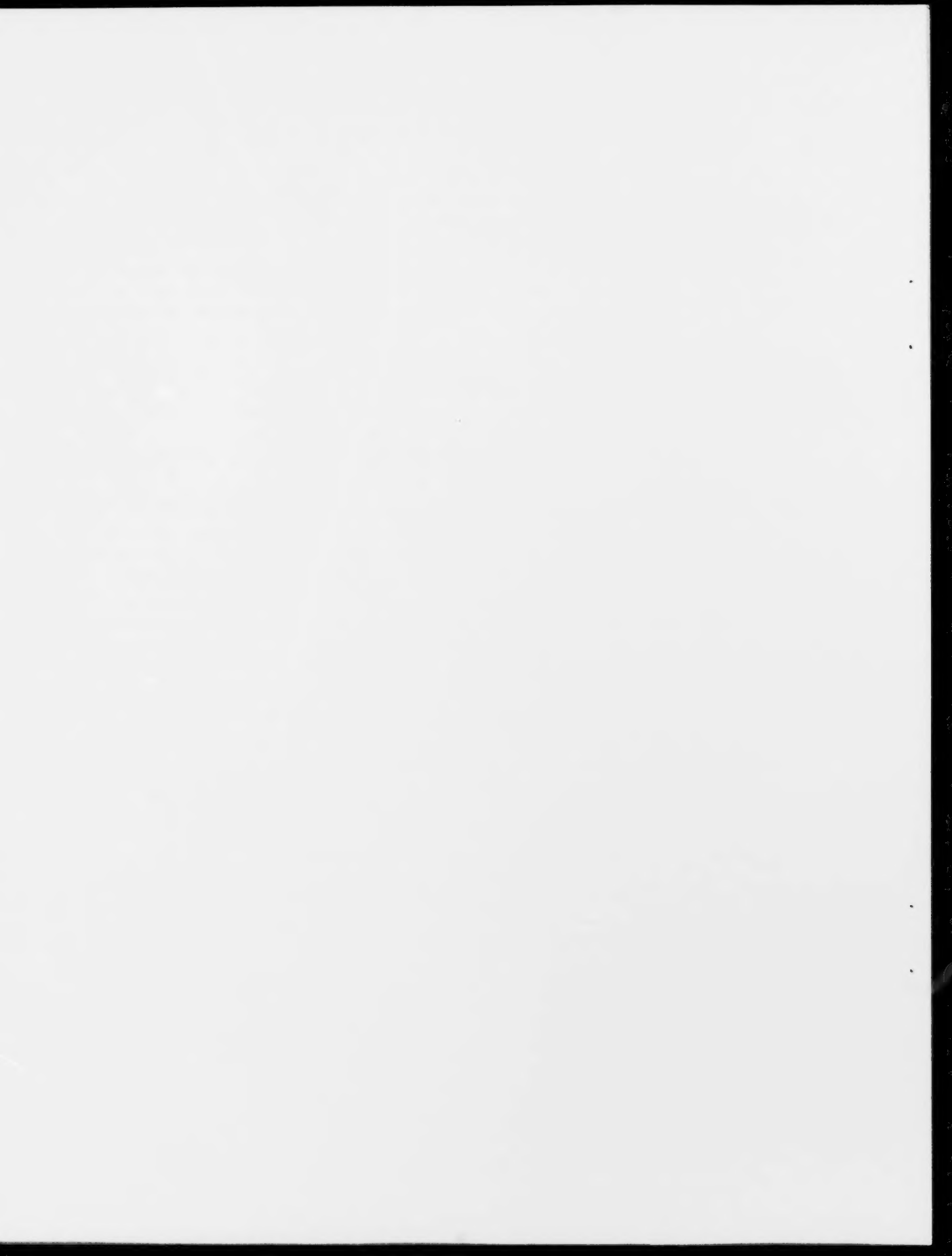


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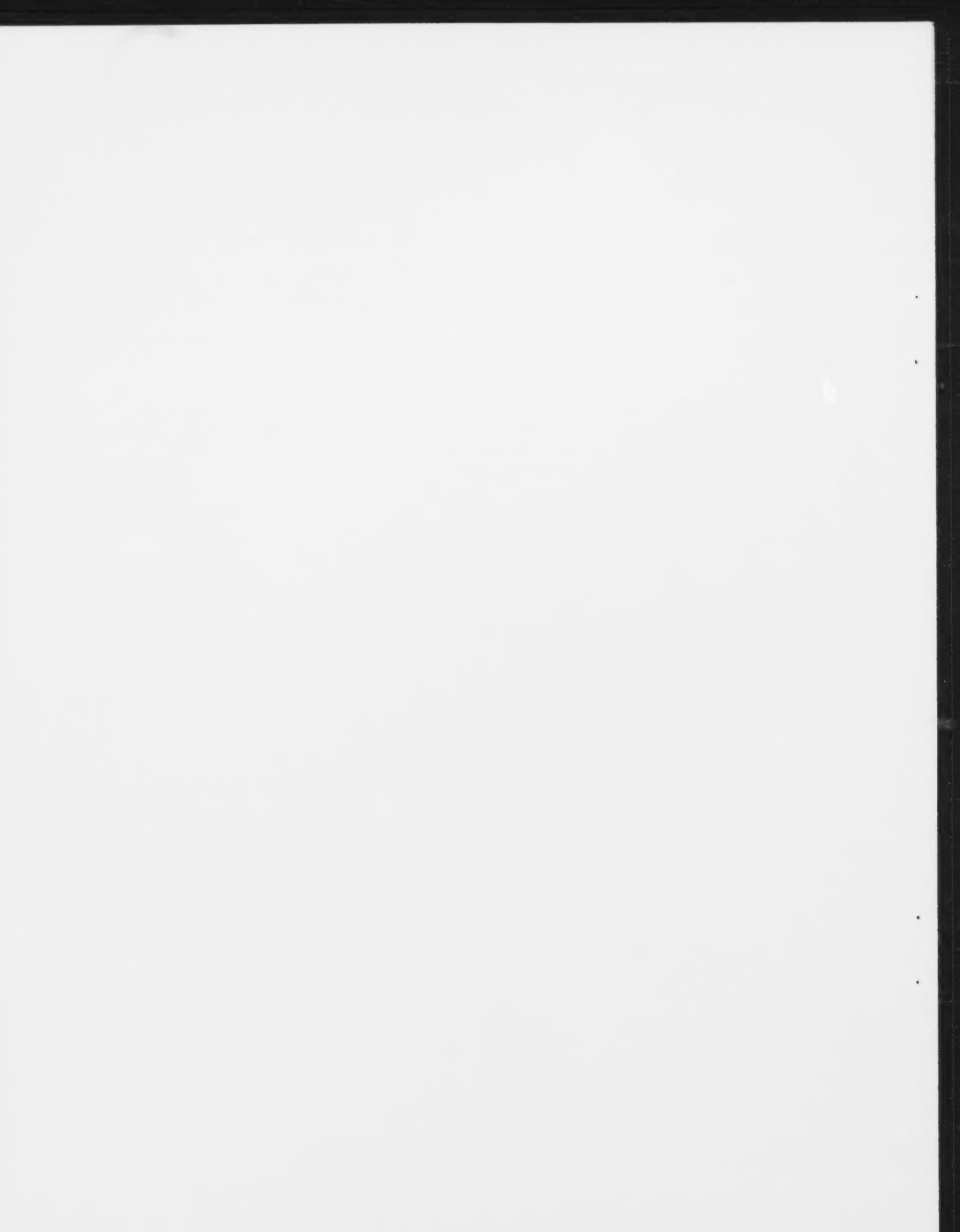
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Foreword

The National Longitudinal Survey of Children and Youth (NLSCY) is a unique Canadian survey designed to follow a representative sample of children from birth to early adulthood. It is conducted in partnership by Human Resources Development Canada (HRDC) and Statistics Canada. Statistics Canada is responsible for data collection, while HRDC, the major funder, directs and disseminates research. Data collection began in 1994 and continues at two-year intervals.

The survey for the first time provides a single source of data for the examination of child development in context, including the diverse life paths of normal development. The survey and the research program were developed to support evidence-based policy, using a human development view of the early decades of life. This research paper is part of an ongoing series of papers emanating from a program of research that examines NLSCY data collected in the first two cycles (1994, 1996) of the survey.



1. Introduction

Despite the large literature indicating a strong association between low income and the well-being of adults (see for example Deaton and Paxon, 1999; Kephart 1998; Lantz 1998; Curtis et al. 1998, Smith et al 1990a,b) the evidence is not as convincing for children. Recent Canadian studies that investigate the link between current household income or poverty status and child well-being find relationships that are small in magnitude or even sometimes insignificant (for example, see Curtis et al. 1998, Dooley et al. 1998a,b). These results appear contrary both to economic theory (e.g., Becker, 1974; Haveman and Wolfe, 1995) which clearly makes the case that income is a key input to children's well-being, and to general public discourse which has been much concerned with levels of child poverty in recent years. Understanding the link between income and children's well-being is vital for policy formulation. If it is true that income is a relatively unimportant determinant of children's well-being, then the policy implication is that transfer programmes for low-income children are also relatively unimportant and thus that other forms of policy intervention should be pursued.

The goal of this paper is to re-examine the hypothesis that economic resources are important inputs to children's well-being (specifically, their health and success at school) using the newly released second wave of the National Longitudinal Survey of Children and Youth (NLSCY). We argue that, on their own, neither current income nor current poverty status provide a very accurate measure of the economic resources available to a child. First, since there can be considerable volatility in income, today's income does not always provide a good indication of the average level of resources which have generally been available to the child (e.g., a parent may have just lost his or her job or gone back to school, etc). Second, it may be that the consequences of low income for children's well-being only appear with a lag. In the Becker (1974) framework, for example, parents are assumed to invest resources in their children today with the expectation of increased attainment in the future. Third, current income takes no account of available family assets (e.g., owner-occupied housing). Finally, two families may have the same income, but earning the income may have taken quite different total amounts of time (e.g., one- versus two-earner families; income from assets versus income from the labour market). According to Becker

(1974), the two key inputs to children's attainments provided by parents, aside from genetic endowment, are income and time. Thus, if we look just at the association between income and children's well-being without controlling for the time required to earn the income, we may have an incomplete picture of the economic resources available for children.¹

Section 2 of the paper outlines some theoretical models of the determinants of children's well-being. Section 3 reviews the relevant empirical work. Section 4 discusses the data used (the 2nd-wave of the National Longitudinal Survey of Children and Youth, or NLSCY), and provides an initial descriptive analysis of the two child outcomes upon which the paper is focussed—children's over-all health and success at school. Section 5 examines the hypothesis that child well-being may be more closely associated with a) longer-term measures of income and poverty status (i.e., using information from 1994 and 1996); b) lagged income or poverty status. In this section, we also consider the possibility that income is endogenous to child well-being. Section 6 provides an empirical examination of two other dimensions of family economic resources: a) home ownership status and housing characteristics; b) time involved in acquiring income. Section 7 offers some conclusions.

¹ Alternative explanations of current findings of the relative empirical unimportance of income for children's well-being include: a) income and/or poverty may be measured with error thus biasing the coefficient towards zero; b) there may be problems of endogeneity (e.g., a lone mother with a seriously ill child may find it hard to work full-time); c) income and/or poverty may be highly correlated with other socioeconomic variables typically included in regression models of the determinants of child well-being, leading to low significance levels (e.g., low income and lone-mother status are very highly correlated). These are extremely valid concerns but difficult to address when studying socioeconomic relationships with health outcomes in a cross-sectional data set. The inconsistencies created by the presence of variables measured with error or endogenous variables can be remedied by the use of instrumental variables but, given the broad determinants of health, researchers find it particularly difficult to identify instruments within available health data sets. Longitudinal data sets just becoming available in Canada, like the National Longitudinal Survey of Children and Youth (NLSCY), should help researchers address these econometric issues when several waves are available. Finally, a point not emphasized here, but which we pursue in other research with P. Burton, is that family resources are not always shared equally among all family members. See, for example, Phipps and Burton, 1995. Thus, it may be true in some families that children receive less than an equal share of family-level resources; in other families they may receive more.

2. A Review of Economic Models of the Link Between Economic Resources and Children's Well-being

Becker (1991, chapters 5 and 6) and Becker and Tomes (1979; 1986), for example, assume that children's well-being essentially depends upon investment decisions made by their parents.² This approach supposes that each individual lives during two periods—childhood and adulthood. The utility of the parent today is assumed to be a function of own consumption today and child's income tomorrow:³

$$u_1 = U(c_1, I_2)$$

where c_1 is adult consumption today and I_2 is child's income tomorrow, when the child is an adult. Thus, the parent is assumed to care about the well-being of his/her child as an adult. In the second period, when the child becomes an adult, his or her utility will be

$$u_2 = U(c_2, I_3).$$

Given this framework, Becker assumes that parents allocate resources between personal consumption today and investment in the future of their children in order to maximize parents' utility today. Utility maximization occurs subject to the constraint of available income, and the relative prices of consumer goods versus investment in children. Children's well-being tomorrow will depend upon how much parents choose to invest in them today (as well as upon the genetic and possibly material asset endowments which they may have inherited from their parents and upon any "pure luck" which they may experience). Investing in children means making "expenditures on their skills, health, learning, motivation, "credentials," and many other characteristics" (Becker and Tomes, 1986, p. S5). The prediction of this framework is that children's incomes will depend upon parents' incomes (positively) and number of other children in the family (negatively, since additional children mean less money to spend on any one individual child.

² Behrman, Pollak and Taubman (1995) for example, adopt a similar perspective. This is the dominant framework employed in discussion by economists. In fact, we are not familiar with any serious contenders.

³ The focus of theoretical economics literature, and much of the empirical literature, is on outcomes for children after they grow up rather than upon outcomes for children while they are children. Phipps (1999) argues that this is not always appropriate.

Leibowitz (1974) adds the idea that investments in children depend upon both the amount and quality of time parents spend with them as well as upon material investments. ("Quality" of time with children is assumed to increase with the education level of the parents.) Thus, parental choices about, for example, labour supply, will determine both how much money and how much time is available for children.

The "human capital" idea has been expanded by Coleman (1988) to include "social capital." Social capital exists when relationships among persons function as resources which can be used to "facilitate action" or to "achieve the interests" of the persons involved (pp. S100-101). According to Coleman, social capital helps to create human capital in the "next generation." He highlights roles both for social capital within the family and for social capital outside the family. Within the family, social capital exists in 'the relations between children and parents' (p. S110). Coleman argues, for example, that if highly educated parents spend little time with their children, then the high levels of human capital possessed by the parents can be of little benefit to the children—and little new human capital will be produced.

Social capital outside the family is defined by Coleman (p. S113) to exist in the relations among parents (of different children) and in the relations of parents with institutions of the community. He argues that social capital is likely to be greatest in situations where parents interact with other parents in a variety of different settings (e.g., at school meetings, in social clubs, at church—all of which take time).

Thus, the major line of reasoning apparent in the economics literature is that more economic resources are better for children because they allow for greater investment in human capital.⁴ But, time as well as money matters—parents with the same income but less available time will not be

⁴ Grossman (1972, 1072a) and Grossman et.al. (1989) also argue that additional economic resources will allow individuals to "produce" more health for themselves, or presumably for their children. These authors postulate a health production function, which includes income as an argument.

able to make the same investments in their children. Finally, as with any other "investment" it is possible that returns are only realized in the future.⁵

⁵ Non-economists have worked more extensively than economists on the subject of child development and offer several alternative theoretical perspectives, surveyed by Haveman and Wolfe (1995). These include: 1) the "socialization/role model perspective" which focuses upon the important influences of parents, siblings and peers on the development of children's aspirations, values and behaviour (e.g., Seltzer, 1994; Jencks and Mayer, 1990); 2) the "ecological systems" approach favoured by many developmental psychologists which argues that development occurs throughout life, and that the timing and context of any significant life event (e.g., parental divorce) will modify its impact on that particular individual (e.g., Bronfenbrenner, 1989); 3) stress theory and coping strategy perspectives argue that a particular stressful event (again, for example, parental divorce) may change a child's equilibrium path of development though the impact of such a stressful event can be mitigated, or not, depending upon parental coping capacities (e.g., Hamilton and McCubbin, 1980). As Haveman and Wolfe argue, these psychological and sociological perspectives emphasize environmental/cultural factors rather than the individual choices/characteristics upon which economists focus. Empirically, however, it may not always be easy to distinguish the various perspectives. For example, is it higher parental income as an input as economists might argue or better role models in the neighbourhood as sociologists might argue which is the key factor associated with better outcomes for children? Empirically, these two hypotheses would be very difficult to disentangle (though see Corak and Heisz, 1998).

3. Review of Empirical Literature

The framework discussed above is very clear that income should matter for children's well-being, yet as noted in the introduction, Canadian studies using the first wave of the National Longitudinal Survey of Children and Youth have found small, and sometimes even statistically insignificant associations, depending upon the measure of income/poverty and the component of children's well-being studied (see Curtis, et.al., 1998; Dooley, et al., 1998a,b)

Several excellent studies in the United States have already made the point that "permanent" income may be a better measure of economic resources than current income, in the context of studying the role of income as a determinant of children's well-being (see, especially, Blau 1998, Korenman et al. 1995, Mayer, 1997). The primary data source for this work has been the National Longitudinal Survey of Youth's (NLSY) Mother and Child Supplement which provides very long income histories. At this stage, although there is consensus that permanent income matters more than current income, there is disagreement as to the magnitude of the effects.⁶

Korenman, et al. (1995) interpret their results to indicate a "moderate to large" effect of changes in long-term poverty status on children's cognitive development. Mayer (1997) reviews existing literature and utilizes several different US data sets and methodologies to conclude that the effect of increases in parental income on child outcomes, *ceteris paribus*, "is nowhere near as large as many political liberals imagine, neither is it zero as many political conservatives seem to believe" (p. 143). She goes on to say that although the effect on any single outcome may be small that most outcomes seem to be affected by income to some extent, thus increasing income may have a substantial cumulative impact. Therefore, changes in the distribution of income (increasing income to the poor) may be as cost-effective as any other policy.

Blau (1999) finds only small effects. In fact he states that the income effects are so small that income transfers to poor families are likely to have very little impact on child development; *"Policies that affect family income will have little direct impact on child development unless they result in very large and permanent changes in income."* (P. 261).

⁶ A more detailed literature review is provided in Curtis and Phipps (2000).

The limited permanent income and moderate poverty effects found thus far in the US NLSY must be taken in context. Mothers in the survey are all very young, aged 14 to 21 in 1979. Thus, by the late 1980s or early 1990s, the time frame for the data used in the studies discussed above, mothers would be in their mid twenties to early thirties (mean age = 27.7).⁷ As a consequence of the young age of the mothers the children tend to be young as well (mean 5.7). The measure of permanent income used by both Blau (1999) and Korenman, et al. (1995) is an average of income or income /needs ratio measured over the available 13 years of data. This measure is averaged over the very early portion of these women's lifetime-income paths, and it is possible that this is not very reflective of future earnings capacity and thus permanent income or poverty. As well, of course, these studies pertain to the United States not Canada.

To date, two longitudinal data sets are available to investigate the association between child health and well-being and socioeconomic status in Canada. The Ontario Child Health Survey (OCHS) conducted in 1983 and 1987 and the 1994 and National Longitudinal Survey of Children and Youth (NLSCY), conducted in 1994 and 1996.

Findings using the OCHS indicate a consistently significant association between low income or poverty and psychiatric disorders (Offord, Boyle and Jones, 1987), social and educational functioning (Lipman and Offord 1994), and chronic physical health problems (Cadman et al., 1986a) in children. Studies using the longitudinal nature of the OCHS find that changes in income levels are very weakly correlated with changes in the levels of child health (Lipman and Offord 1996, Lipman, Offord and Boyle 1994 and Boyle et al. 1998). The studies that find a significant relationship between income and child health tend to limit the use of other explanatory variables.

Curtis et al. (2000) investigate the relationship between current low-income and low-average-income using the OCHS. Fifteen percent of families were poor in 1983 and 13% in 1987.

⁷ The means are taken from Table A-1 of the Blau paper. No summary statistics for the entire sample were presented in the Korenman et al. paper.

13% of children lived with families whose average incomes (between 1983 and 1987) were less than the LICO⁸ and 7% of the children were from households with income below the LICO in both years. The study investigated the presence of emotional problems, cognitive problems, any health problems and an over-all health related quality of life score, the Health Utilities Index Mark 2 (HUI2).

As in the Koreman study, children from low-income families suffered from substantially more problems than did children from non-low-income families. Although *current* low-income had no statistically significant relationship with emotional problems in either 1983 or 1987, living in a family whose *average* income for the two years was less than poverty level increased a child's probability of having an emotional problem by 9 percentage points (from 44 to 53%) which was roughly comparable to the lone-mother association. Results were very comparable for HUI2 scores. For cognitive problems, both current and average low-income were negatively associated, though the effect was larger for average low-income. Curtis et. al. (2000) conclude that, like many of the NLSY studies, child outcomes are more strongly related to low-average income than low-current income. Contrary to some of the results coming out of the NLSY they find that the magnitude of income effects to be "large" for some outcomes.

⁸ See companion paper to Curtis et al. (2000) for description of income measures.

4. Data

The data used in this analysis are drawn from Cycle Two of the NLSCY, which is a representative national sample of children who were aged 0 to 11 years in 1994 and 0 to 13 years in 1996. The main component of the survey consists of children living in households who had recently been part of the Labour Force Survey (thus households living in the North, on Indian Reserves or in institutions are excluded). We use information obtained from the "person most knowledgeable about the child" (or pmk)—the mother in 90 percent of cases. Since we want to have longer-term measures of poverty status and income, we select only children present in both years of the survey. Since we rely upon the reports of the pmk, we require this to be the same person for both years. These two restrictions limit the sample to 12,824 children aged 2 to 13. Since one of our key outcome variables is "success at school" we must further restrict the sample to children aged 6 to 13 (7577 children). Finally, exclusion of observations with non-response to any questions used in our analysis results in an estimating sample of 7337 observations.

Although we recognize that "child well-being" is a multi-dimensional construct, we have chosen to limit our analysis in this paper to just two outcomes—over-all health and success at school. These two outcomes seem particularly relevant to the economic models of "human capital formation" discussed above. Moreover, health and success at school are child outcomes with significant economic implications both in terms of health care and education costs and in terms of the child's eventual labour market success.⁹ Finally, we have chosen to focus on 1996 *levels* of these child outcomes (rather than upon changes in child outcomes between 1994 and 1996). We argue that, substantively, it is a different question to ask why some children have good or bad outcomes than to ask why some children have changed outcomes. For example, a majority of children in the NLSCY do well in *both* periods; some children do very badly in both periods—we want to understand the correlates of these good or bad outcomes even if there was no *change* between the two time periods.¹⁰

⁹ However, see Phipps (1999) who argues that the child's well-being today as well as their attainments tomorrow are important if we are concerned about social welfare.

¹⁰ Curtis and Phipps (2000) use both 1994 and 1996 child outcomes to look at changes in outcomes as a function of changes in explanatory variables. However, for the outcomes studied here, in particular, there are some associated technical difficulties since the outcomes studied have only 5 possible categories and a majority of respondents are already in the top category (i.e., the only change possible for a majority of the children we study is a movement down).

Table 1 reports frequencies for our two child outcome measures for 1996. The first of these is a pmk assessment of the child's over-all health status. "In general, would you say your child's health is: Excellent, Very good, Good, Fair or Poor." Fortunately, it is clear from Table 1 that a majority (59.6 percent) of parents rate their children's health as "excellent;" an additional 28 percent of children are assessed as having "very good" health. This seems reasonable for a sample of young children.¹¹ Only 0.2 percent (16 observations) are assessed as having "poor" health.

Our second outcome is a measure of the child's "success at school:" "Based on your knowledge of your child's school work, including his or her report cards, how is your child doing overall? Possible answers include: "Very Well, Well, Average, Poorly, Very Poorly." It is again clear from Table 1 that most parents perceive their children to be very successful at school over-all—46.6 percent of children are ranked as doing "very well" and 25.6 percent are ranked as doing "well."¹² Thus, 72.2 percent of children are apparently doing "better than average!" However, to put these rather optimistic figures in perspective, only 1 percent of married men and 2 percent of married women report themselves to be unhappy with life over-all (see Phipps, Burton and Osberg, 2000).

Table 1 **Frequencies of General Health and Success at School**

Health <i>In general, would you say (your child's) health is:</i>		Success at School <i>Based on your knowledge of (your child's) school work, including his/her report cards, how is your child doing overall ?</i>	
Poor	0.2%	Very poorly	0.3%
Fair	1.7%	Poorly	3.1%
Good	10.5%	Average	24.4%
Very good	28.0%	Well	25.6%
Excellent	59.6%	Very well	46.6%

¹¹ It is possible that the choice of the label "average" for the middle category was a bad one. If the middle category is "average" this suggests a normal distribution for children's health, which may not be appropriate if in fact most young children are very healthy.

¹² In other work (see Curtis, Dooley and Phipps, 2000), we present evidence of relatively low correlations between parental and child reports of child outcomes for 10 and 11-year old children. "Success at school" was the outcome with the highest correlation between child and parent reports. This provides an additional motivation for choosing this outcome to study. (Children were not asked to assess their own health status.)

5. Multivariate Analysis of the Association Between Child Health and Success at School and Current Versus Longer-Term Measures of Family Income and Poverty Status

In this section of the paper, we begin our re-examination of the hypothesis that economic resources are important inputs to children's health and success at school. Since each outcome measure is reported in 5 categories, we estimate ordered probit models.¹³ Our basic specification for these regressions follows Dooley et. al., 1998 or Curtis, Dooley and Phipps, 1999. That is, we employ a relatively pared-down specification, controlling for pmk having less than high-school education, child age, a dummy for gender of the child (=1 if the child is female); number of children in the household and age of the pmk. These controls are employed in all specifications, with our focus being upon the impact of varying our measure of poverty/income.¹⁴

To provide a benchmark, we begin by re-estimating, using the 1996 data, models which are very similar to those available using the first wave of the NLSCY. Thus, we regress current (1996) outcome measures on current (1996) measures of poverty and annual income. However, as argued above, current measures of either income or poverty status are arguably not the most appropriate indicators of the economic resources available to the child.

First, given the volatility of current annual income for some families, particularly, lower-income families, a two-period average measure of income is presumably preferable to current annual income purely as an indicator of family "permanent income." Thus, we include average income and "average poverty" (i.e., income for 1994 and 1996 less than a two-period average poverty line).¹⁵ However, it is not necessarily the same experience to have an average income which is low,

¹³ We were concerned about the statistical validity of using all 5 categories when there are so few children reported to have, for example, poor health. Thus, we re-ran all of the models reported in this paper aggregating to 4 and also to just 3 categories. Qualitative results were unaffected. We thus maintain the 5 categories on the grounds that the small number of children reported in the worst health category are presumably those with very serious medical conditions, whose poor health status should not be aggregated with those of other children.

¹⁴ Since some of our observations are children from the same family, we adjust all standard errors for non-independence of observations using the "cluster" procedure of Stata.

¹⁵ Our measure of poverty is 50 percent of median equivalent income using the OECD equivalence scale. Median equivalent incomes are calculated using the 1994 and 1996 SCF's, respectively. The "average poverty" line is calculated as the average of the 1994 and 1996 poverty lines (with the 1994 poverty line expressed in 1996 dollars). Average income is the family's average income for the two periods, expressed in 1996 dollars.

and to have low income which lasts a long time. Thus, we also test the association between two-period poverty (i.e., poor in *both* 1994 and 1996) and children's health and success at school. This measure begins to incorporate the duration of low-income experience, but it is also possible that the dynamics of low-income experience are important for children's well-being. Becker's framework, for example, allows for the possibility that returns to investments in human capital may only be apparent with a lag (e.g., tutoring may result in improved school performance next period rather than immediately). Hence, we also consider lagged rather than current measures of poverty and income. On the other hand, coming full circle, it may be more important that you are hungry today than that you were hungry yesterday for how well you are able to perform at school currently. Thus, it is not a priori obvious which measures of income/poverty are likely to have the largest association with child outcomes, and this may differ across outcomes.

Table 2 Means for the Estimating Sample—Analysis Variables

Poor in 1996	24.9%
Poor in 1994	25.5%
Poor in 1994 and 1996	17.8%
Poor using an average over 1994 and 1996	23.3%
Equivalent income 1996 (1996 \$)	19,149
Equivalent income 1994 (1996 \$)	18,933
Average equivalent income (1996 \$)	19,041
Household member owns home	78.1%
House needs major repairs	6.4%
Weekly available parental hours	147.5
Number of observations	7337

Table 2 reports means for our first set of "economic resource" variables (means for other controls are reported in Appendix Table 1). In 1994, 25.5 percent of children aged 6 to 13 years lived in poor families; in 1996, 24.9 percent were poor.¹⁶ 23.3 percent of children lived in families whose

¹⁶ Recall that these figures are for our estimating sample. However, poverty rates for the full sample of children aged 2 to 13 years in 1996 were very similar: 26.9 percent in 1994 and 26.1 percent in 1996.

average incomes across the two periods was low enough to be counted as poor "on average;" 17.8 percent of children were poor in both periods. While we do not know whether children who were poor in both 1994 and 1996 were poor throughout the entire time period, these data do indicate significant persistence of low-income status.

Table 3 presents results for ordered probit models¹⁷ of the association between child health and alternative measures of income and poverty status. Consider, first, results for alternative measures of poverty. Interestingly, given the motivation for this paper, it is current poverty status which has the largest association with child health, though all measures considered are statistically significant, and fairly similar in magnitude. The second largest association is with having been poor in both periods. Note that low-income status is the most important factor associated with child health in these regressions, followed by low-education status and lone-parent status.¹⁸

The last 3 specifications reported in Table 3 use alternative measures of income rather than dummy variables for poverty status. We use "equivalent" income rather than "actual" income, where equivalent income is actual income divided by an equivalence scale to adjust for the economies of scale available to individuals who live together (e.g., savings on housing, utilities, transportation costs).¹⁹ Since we also include a direct control for number of children in the household, our intent is to capture the financial implications of additional children through the "equivalent" income variable and other implications of siblings in the direct measure (e.g., playing, fighting, comforting, etc.). Since economists generally argue that a marginal dollar is of more value to a low-income family than to a high-income family (i.e., that there is diminishing marginal utility of income), we include both equivalent income and its square in these models.

¹⁷ The ordered probit results cannot be interpreted in the same way as OLS results can be. A positive coefficient means the distribution of answers shifts to the right. From this we know that the probability of being in the lowest (best in outcomes in this case) category decreases and being in the highest category increases (worst outcome here). It is not possible to discern the changes in the distribution of the middle categories from "eyeballing" the coefficients.

¹⁸ In this paper, "lone-parents" include both lone mothers and lone fathers.

¹⁹ As for our poverty calculations, we employ the OECD equivalence scale for these calculations. Thus, the first adult is assigned an equivalence value of 1.0; subsequent adults are assumed to add 0.7 to household needs; subsequent children are assumed to add 0.5.

When alternative measures of equivalent income are used in place of the poverty dummies, it is the two-period average of equivalent income which has the largest association with child health (though again all income variables tested are significant at the 99 percent level). For both current and lagged income, "declining marginal utility of income" is apparent (i.e., the quadratic term is statistically significant and negative—inflection points are at about \$26,000 1994 equivalent dollars and at \$35,000 equivalent dollars respectively).

Table 4 changes the focus from health to success at school, but otherwise repeats exactly the same exercise. In this case, the poverty measure with the largest association with success at school is "poor in both periods"; lagged poverty has the second largest effect. Again, aside from child gender (girls do significantly better at school), the poverty associations are the largest observed in these models. In terms of other controls, having a pmk with low education is next most important followed by lone-parent status.

For the models which include alternative measures of equivalent income and equivalent income squared (reported in the final 3 columns of Table 4), it is again true that lagged and average equivalent income have larger associations with children's success at school than current income. And, for both lagged and average equivalent income, the quadratic term is statistically significant and negative (indicating that in terms of association with success at school, dollars to poorer children are more important than dollars to richer children).²⁰

Throughout this paper, some readers may feel concern about our treatment of income as an exogenous variable. Specifically, it is possible that in fact the causality is in the other direction: it may be that poor child health is associated with low-income status because, for example, possibilities for parental participation in the paid labour market are limited by the need to care for the child with health problems. Regressing change in dependent variables on changes in independent variables is one way to address the issue of endogeneity between income/poverty and health; if we could identify a change in income in one period *followed by* a change in health status the next period we could argue convincingly that the poverty "causes" decreases in health status.

²⁰ Inflection points for these quadratics are at \$22,000 1994 dollars and \$29,000 1996 dollars, respectively.

However, as there are only two waves of the NLSCY available to date we still cannot trace in which order the changes are occurring. Moreover, as argued earlier, explaining changes in outcomes is not the same thing as explaining levels of outcomes, which is our emphasis in this paper.²¹

We present here the results of an informal investigation of the issue of potential endogeneity of income to child health status. The key line of reasoning outlined earlier is that it is possible that having an unhealthy child might mean parents do not work for pay, or work fewer hours. It does not seem reasonable to argue that having an unhealthy child would limit other forms of income (e.g., transfers, asset income). Thus, if there is validity in the idea that income is endogenous to child health, we should see parents with less healthy children engaging in less paid work.

We investigate this idea informally in Table 5, which compares parental labour market outcomes for the "best" and "worst" outcomes, where best and worst are identified by the bottom two and top categories for schooling and health, respectively. Note, first, that father's rates of labour-force participation and hours of paid work have essentially no association with the child outcomes (i.e., outcomes appear very similar for fathers with most and least healthy children). Mother's labour-force participation is lower for health, but much the same for schooling outcomes (in fact, labour force participation is slightly higher for the children with the best outcomes). Thus, there is possibly a connection for general health, but the issue seems less important for success at school. This seems reasonable.

²¹ In other work (Curtis and Phipps, 2000), we present the results of a multivariate analysis of *changes* in child health on changes in poverty status. Unfortunately, results were considerably less precise than those obtained for levels of child outcomes.

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Table 3 Ordered Probit Estimates of 1996 Health Using Current, Lagged and Two-Period Measures of Poverty and Equivalent Income

Variable	Poor in 1996	Poor in 1994	Poor in both 1996 and 1994	Average income less than poverty line	1994 equivalent income	1996 equivalent income	Average equivalent income
Dummy=1 if family is poor	0.222* (0.061)	0.191* (0.060)	0.217* (0.069)	0.205* (0.062)	—	—	—
Equivalent income	—	—	—	—	-0.206* (0.040)	-0.209* (0.037)	-0.225* (0.042)
Equivalent income squared	—	—	—	—	0.008** (0.004)	0.006*** (0.004)	0.007 (0.004)
Dummy=1 if a lone parent family	0.145** (0.067)	0.166* (0.067)	0.159** (0.068)	0.155** (0.068)	0.121*** (0.065)	0.98 (0.066)	0.095 (0.065)
Dummy=1 if the PMK has< high school	0.161** (0.079)	0.171** (0.078)	0.170** (0.079)	0.163** (0.080)	0.126 (0.080)	0.110 (0.081)	0.108 (0.081)
Age of the child	-0.015 (0.010)	-0.015 (0.010)	-0.014 (0.010)	-0.015 (0.010)	-0.017*** (0.010)	-0.018*** (0.010)	-0.018*** (0.010)
Dummy=1 if the child is female	-0.001 (0.043)	0.001 (0.043)	-0.002 (0.043)	0.002 (0.043)	0.004 (0.043)	0.007 (0.043)	0.006 (0.043)
Number of children in household	-0.069* (0.027)	-0.065** (0.027)	-0.067* (0.027)	-0.068* (0.027)	-0.090* (0.027)	-0.095* (0.027)	-0.098* (0.027)
Age of the PMK	0.0003 (0.005)	0.001 (0.005)	0.0001 (0.005)	0.001 (0.005)	0.005 (0.005)	0.006 (0.005)	0.006 (0.005)
Intercept 1	0.055 (0.197)	0.090 (0.198)	0.041 (0.197)	0.056 (0.197)	-0.236 (0.198)	-0.247 (0.204)	-0.266 (0.202)
Intercept 2	0.980* (0.197)	1.014* (0.199)	0.965* (0.198)	0.980* (0.197)	0.697* (0.199)	0.688* (0.204)	0.670* (0.202)
Intercept 3	1.926* (0.204)	1.961* (0.205)	1.910* (0.204)	1.927* (0.203)	1.648* (0.205)	1.640* (0.209)	1.623* (0.208)
Intercept 4	2.736* (0.227)	2.772* (0.229)	2.718* (0.228)	2.738* (0.226)	2.458* (0.226)	2.449* (0.231)	2.432* (0.229)

Note: Equivalent income is family income divided by the OECD equivalence scale to account for the economies of scale available to individuals who live together. Equivalent income is measured in tens of thousands Canadian dollars. All income measures are expressed in 1996 dollars (i.e. 1994 dollars are inflated to 1996 values).

* significant with 99% confidence

** significant with 95% confidence

*** significant with 90% confidence

Table 4 Ordered Probit Estimates of 1996 Success at School Using Current, Lagged and Two-Period Measures of Poverty and Equivalent Income

Variable	Poor in 1996	Poor in 1994	Poor in both 1996 and 1994	Average income less than poverty line	1994 equivalent income	1996 equivalent income	Average equivalent income
Dummy=1 if family is poor	0.236* (0.058)	0.244* (0.052)	0.300* (0.062)	0.225* (0.056)	—	—	—
Equivalent income	—	—	—	—	-0.177* (0.037)	-0.143* (0.034)	-0.176* (0.038)
Equivalent income squared	—	—	—	—	0.008** (0.004)	0.004 (0.003)	0.006*** (0.004)
Dummy=1 if a lone parent family	0.138** (0.065)	0.143** (0.062)	0.125** (0.063)	0.143** (0.064)	0.137** (0.062)	0.138** (0.063)	0.126** (0.063)
Dummy=1 if the PMK has < high school	0.176* (0.071)	0.180* (0.070)	0.174* (0.071)	0.176* (0.071)	0.155** (0.070)	0.156** (0.071)	0.147** (0.071)
Age of the child	0.029* (0.010)	0.030* (0.010)	0.030* (0.010)	0.029* (0.010)	0.028* (0.010)	0.027* (0.010)	0.027* (0.010)
Dummy=1 if the child is female	-0.238* (0.041)	-0.234* (0.041)	-0.239* (0.041)	-0.223* (0.041)	-0.233* (0.041)	-0.230* (0.041)	-0.232* (0.041)
Number of children in household	-0.021 (0.026)	-0.020 (0.026)	-0.025 (0.030)	-0.021 (0.026)	-0.033 (0.026)	-0.029 (0.026)	-0.035 (0.026)
Age of the PMK	-0.006 (0.005)	-0.005 (0.005)	-0.006 (0.005)	-0.006 (0.005)	-0.002 (0.005)	-0.002 (0.005)	-0.001 (0.005)
Intercept 1	-0.094 (0.181)	-0.036 (0.184)	-0.098 (0.182)	-0.094 (0.182)	-0.341*** (0.179)	-0.301*** (0.185)	-0.341*** (0.182)
Intercept 2	0.594* (0.182)	0.652* (0.186)	0.590* (0.183)	0.594* (0.183)	0.350** (0.181)	0.389** (0.186)	0.351*** (0.184)
Intercept 3	1.852* (0.187)	1.910* (0.1907)	1.850* (0.189)	1.850* (0.188)	1.615* (0.186)	1.651* (0.190)	1.616* (0.188)
Intercept 4	2.770* (0.202)	2.831* (0.205)	2.771* (0.203)	2.770* (0.203)	2.532* (0.199)	2.569* (0.204)	2.534* (0.202)

Note: Equivalent income is family income divided by the OECD equivalence scale to account for the economies of scale available to individuals who live together. Equivalent income is measured in tens of thousands Canadian dollars. All income measures are expressed in 1996 dollars (i.e. 1994 dollars are inflated to 1996 values).

* significant with 99% confidence

** significant with 95% confidence

*** significant with 90% confidence

Table 5 **Average Labour Force Participation and Weeks Worked for Children in Top and Bottom Decile/Category for Each Outcome, Mothers and Fathers**

	Health		Success at School	
	Top two categories (fair & poor)	Bottom category (excellent)	Top two categories (poorly & very poorly)	Bottom category (very well)
Mother				
Labour force participation	65.3%	73.0%	72.6%	75.4%
Weeks paid work last year	24.8	31.7	30.8	32.9
Father				
Labour force participation	94.8%	96.4%	96.7%	95.9%
Weeks paid work last year	46.3	47	45.3	47

Table 6 Ordered Probit Estimates of 1996 Health, Adding Controls for Home Ownership, Housing State of Repair and Available Parental Time

Variable	Poor in both 1996 and 1994	Poor in both 1996 and 1994	Poor in both 1996 and 1994	Average equivalent income	Average equivalent income	Average equivalent income
Dummy=1 if family is poor	0.141** (0.068)	0.208* (0.072)	0.140** (0.071)	—	—	—
Equivalent Income	—	—	—	-0.187* (0.046)	-0.239* (0.042)	-0.202* (0.045)
Equivalent Income Squared	—	—	—	0.004 (0.005)	0.008** (0.004)	0.005 (0.005)
Dummy=1 if a lone parent family	0.083 (0.073)	0.222*** (0.117)	0.114 (0.121)	0.046 (0.072)	0.023 (0.113)	-0.046 (0.117)
Dummy=1 is the PMK has< high school	0.147*** (0.080)	0.171** (0.080)	0.151*** (0.081)	0.096 (0.082)	0.116 (0.081)	0.105 (0.082)
Age of the child	-0.016 (0.010)	-0.140 (0.010)	-0.015 (0.010)	-0.018*** (0.010)	-0.018*** (0.010)	-0.019*** (0.010)
Dummy=1 if the child is female	0.003 (0.042)	-0.002 (0.043)	0.002 (0.043)	0.008 (0.043)	0.006 (0.043)	0.008 (0.043)
Number of children in household	-0.063** (0.027)	-0.070* (0.027)	-0.063** (0.027)	-0.093* (0.027)	-0.097* (0.027)	-0.092* (0.027)
Age of the PMK	0.002 (0.005)	0.00002 (0.005)	0.002 (0.005)	0.007 (0.005)	0.007 (0.005)	0.008 (0.005)
Dummy=1 if dwelling is owned by household member	-0.218* (0.069)	—	-0.218* (0.069)	-0.141** (0.069)	—	-0.151** (0.069)
Dummy=1 if major repairs required	0.275* (0.086)	—	0.280* (0.086)	0.226* (0.083)	—	0.227* (0.084)
Weekly available parental hours	—	0.001 (0.001)	0.0004 (0.001)	—	-0.001 (0.001)	-0.001 (0.001)
Intercept 1	-0.059 (0.199)	0.171 (0.280)	0.010 (0.280)	-0.274 (0.205)	-0.419 (0.288)	-0.464 (0.290)
Intercept 2	0.870* (0.199)	1.093* (0.280)	0.937* (0.279)	0.665* (0.205)	0.514*** (0.287)	0.472*** (0.289)
Intercept 3	1.822* (0.206)	2.038* (0.288)	1.889* (0.289)	1.622* (0.211)	1.466* (0.295)	1.429* (0.297)
Intercept 4	2.635* (0.227)	2.847* (0.300)	2.704* (0.298)	2.436* (0.231)	2.276* (0.305)	2.243* (0.305)

* significant with 99% confidence

** significant with 95% confidence

*** significant with 90% confidence

6. Multivariate Analysis of the Association Between Child Health and Success at School and Economic Resources, Adding Controls for Assets and for Time

This section of the paper moves beyond measuring economic resources simply as income flows in an attempt to control for: 1) assets available to the family and; 2) time associated with acquiring income. Economists would not argue with the proposition that two families with the same income but different levels of wealth are not in the same economic circumstances. The problem is that few microdata sets provide information about assets, and the NLSCY is no exception. However, since housing is often the major form in which families with children hold assets, we decided to include a dummy variable indicating that the house in which the child lives is owned by a member of the household (not necessarily mortgage free). In our estimating sample, 78 percent of children live in owner-occupied dwellings. Of course, houses can be big or small, fancy or plain. We have no indication of the assess value of the home, so we attempted a variety of measures to proxy for this. Our best alternative²² appears to be that the child lives in a home "in need of major repair" (i.e., defective plumbing or electrical wiring, structural repairs to walls, floors or ceilings, etc.).²³ Only 6 percent of children in our estimating sample live in homes which require major repairs.²⁴

The other new control which we add in this section is for the amount of time required to acquire family income. Particularly for children, parental time can be an important input to well-being. A Becker-style human capital model predicts that, income equal, two families with more time available for children should be able to make greater investments in their children's human capital. The Coleman perspective adds the idea that parental time is required to develop "social capital" (e.g., by attending Home and School meetings or helping to coach soccer teams). Thus, we create a "parental time available per week."²⁵ For lone parents, this is total weekly hours, less weekly

²² "Number of bedrooms per person" was not statistically significant in any case.

²³ Of course, some homes can be both very expensive and in need of major repairs.

²⁴ Interestingly, correlations of these variables with the incidence of poverty is relatively low. For example, the correlation between being poor in both 1994 and 1996 and owning a home in 1996 is -0.41; for housing requiring major repairs the correlation is 0.07.

²⁵ We choose to focus upon weekly rather than annual hours as this seems more relevant for children. Care can't be deferred until a later point in the year. See also Phipps, Burton and Osberg who find it is weekly hours which generate most time stress for adults.

"sleep time" (i.e., 8X7),²⁶ less usual weekly hours of paid work.²⁷ For two-parent families, we create this measure for each parent, and add them. Thus, it is clear that we are in some sense muddling lone-parent status with the "available time" variable.²⁸ That is, the maximum available weekly parental hours for a lone-parent with zero hours of paid work is 112 [24X7 - 8X7]. Both parents in a two-parent household would have to work at least 56 hours per week in the paid labour force to have as little available time as a lone parent with the maximum available time. In fact, in our data, 32 percent of lone parents do not have paid work and thus have 112 available weekly hours. And, a handful of two-parent households do have fewer free hours than this (0.4 percent of all two-parent families). However, it is very clear that mean available parental time is much greater for two-parent families (161 hours) than for lone-parent families (90 hours).

The major sources of variation in the available time variable are thus marital status of parents in combination with patterns of labour-force participation. As noted above, 68 percent of lone parents participate in the paid labour force. For couples, in 73 percent of cases, both parents have paid employment; 25 percent of two-parent families have one earner. And, of course, hours of paid employment vary significantly for those with paid employment. Figure 1 illustrates the distributions of the available time variable for one- and two-parent families.

In Table 6, we add, separately and together, the home and time variables to the child health ordered probit equations with "poor in both 1994 and 1996" and "average equivalent income" as our currently "longest term" measures of financial flows. Table 7 presents the same information for success at school. We are interested both to see what these additional measures of economic resources add to our story, and to see how they affect the estimated association between poverty/income and children's outcomes.

²⁶ We all know that parents are not always able to sleep a full 8 hours. And, it seems likely that this is especially difficult for lone parents. However, we do not actually know how many hours parents sleep. Subtracting the same quantity of "sleep hours" for each parent will have no real impact on our results, but it makes interpretation more logical.

²⁷ Parents who are self employed are not asked their usual weekly hours. However, we have a report of annual hours, which we use to construct the weekly measure. For anyone who reported no paid work during the survey year, "zero weekly hours" were assigned.

²⁸ The correlation between the "lone-parent" dummy and the available parental time variable is -0.80.

Consider, first, the role of home ownership as a proxy for assets. This variable is statistically significant, and associated with better outcomes for children in all of the health models estimated. For over-all health status, the quantitative magnitude of the variable is rather large—considerably larger than the dummy variable indicating poverty in both periods, for example. For success at school, it is not significant when entered without controlling for time, but significant at the 90 percent level when the time variable is added to the model.

The dummy variable indicating that the family residence is in need of major repairs is statistically significant for both outcomes in all specifications (at the 99 percent level) and always associated with worse outcomes for children. The association between “major repairs” and child health status is one of the most important observed (larger than the two-period poverty and the home ownership associations). For schooling, two-period poverty status still has the larger association, but “major repairs” dominates lone-parent status (which, in fact, is not statistically significant in this specification).

Note that with the addition of the home ownership dummy, the apparent association of both lone-parent status and poverty status with child health status diminish. Poverty status remains statistically significant and a relatively important explanatory variable, but coefficient size falls from 0.217 to 0.141 when the housing variables are added to the specification. Lone-parent status becomes insignificant. However, the finding of a smaller association between low-income and child health does not mean that economic resources are *less* important than we had previously thought. Rather, we have added another channel through which economic resources may influence child health. Thus, for example, a lone mother living with a low income but who owns her own home is in rather different circumstances than a lone mother with the same income who does not. We should not just look at income when attempting to understand the importance of economic variables for child health.

Finally, consider the role of available parental time as a correlate of child outcomes. This variable is not statistically significant in any of the child health equations, but, controlling for income, more available parental time is consistently significant at the 99 percent and associated with greater success at school. Presumably, time is a particularly important input both for direct help with homework, enriching outings, and reading to children, for example, and for indirect support of

school activities (e.g., home and school work, volunteering at the school, going along on school outings). Notice that when "available time" is added without also controlling for the housing variables, lone parent status is statistically insignificant (though coefficient estimates are not noticeably different in actual magnitude). In the specification which includes both available hours and the housing variables, lone-parent status is again statistically significant.²⁹

Once we have controlled for available time in the schooling equations, the estimated association between poverty and equivalent income and success at school increases in magnitude. This remains true after we add in the housing variables.

²⁹ Given the high correlation (-0.8) between lone-parent status and available time, it seems natural to suppose that what is going on here is imprecision due to multicollinearity. Given this concern, we also re-ran these models separately for two-parent families and obtain qualitatively the same results—available time is statistically insignificant in the health equations, but significant at the 99 percent level in the schooling equations. Moreover, the observed poverty and income effects increase in magnitude when we control for time.

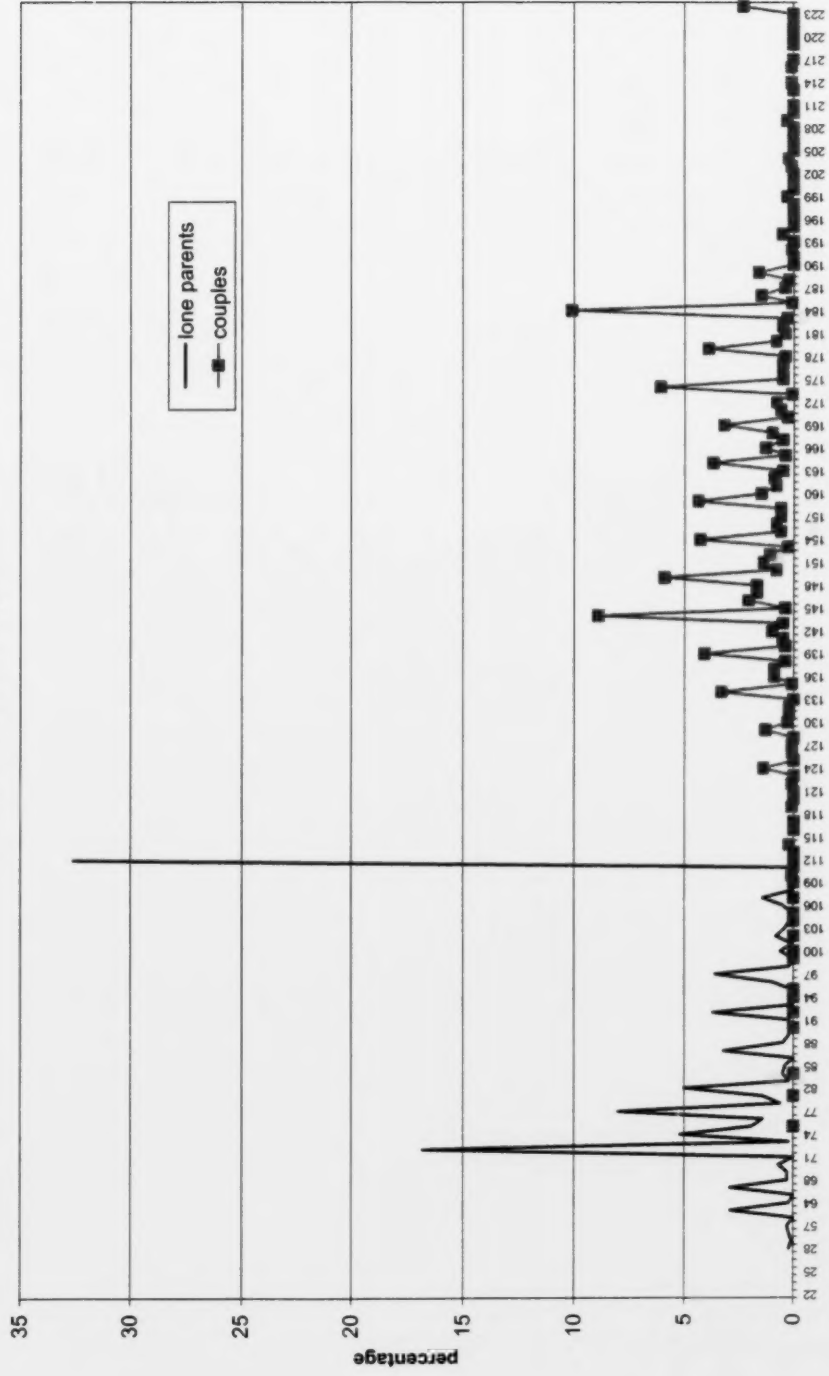
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Table 7 Ordered Probit Estimates of 1996 Success at School, Adding Controls for Home Ownership and Housing State of Repair

Variable	Poor in both 1996 and 1994	Poor in both 1996 and 1994	Poor in both 1996 and 1994	Average equivalent income	Average equivalent income	Average equivalent income
Dummy=1 if family is poor	0.261* (0.065)	0.358* (0.064)	0.317* (0.066)	—	—	—
Equivalent Income	—	—	—	-0.154* (0.038)	-0.213* (0.040)	-0.190* (0.039)
Equivalent income squared	—	—	—	0.005 (0.004)	0.009** (0.004)	0.007*** (0.004)
Dummy=1 if a lone parent family	0.086 (0.069)	-0.121 (0.113)	0.187*** (0.115)	0.094 (0.069)	-0.154 (0.112)	-0.211*** (0.115)
Dummy=1 is the PMK has< high school	0.162** (0.072)	0.191* (0.071)	0.177* (0.072)	0.138** (0.071)	0.163** (0.071)	0.154** (0.071)
Age of the child	0.297* (0.010)	0.029* (0.010)	0.029* (0.010)	0.027* (0.010)	0.255* (0.010)	0.025* (0.010)
Dummy=1 if the child is female	-0.238* (0.041)	-0.239* (0.041)	-0.237* (0.041)	-0.231* (0.040)	-0.230* (0.041)	-0.229* (0.041)
Number of child household	-0.022 (0.026)	-0.019 (0.016)	-0.016 (0.026)	-0.032 (0.026)	-0.030 (0.027)	-0.016 (0.026)
Age of the PMK	-0.005 (0.005)	0.005 (0.005)	-0.004 (0.005)	-0.001 (0.005)	-0.0001 (0.005)	0.001 (0.005)
Dummy=1 if dwelling is owned by household member	-0.112 (0.071)	—	-0.134*** (0.070)	-0.091 (0.068)	—	-0.116*** (0.067)
Dummy=1 if major repairs required	0.193** (0.087)	—	0.188** (0.086)	0.164*** (0.088)	—	0.153*** (0.086)
Weekly available parental hours	—	-0.003* (0.001)	-0.003* (0.001)	—	-0.004* (0.001)	-0.004* (0.001)
Intercept 1	-0.147 (0.186)	-0.563** (0.266)	-0.663* (0.270)	-0.351*** (0.184)	-0.937* (0.276)	-0.987* (0.278)
Intercept 2	0.543* (0.188)	0.124 (0.267)	0.025 (0.271)	0.342*** (0.185)	-0.246 (0.277)	-0.296 (0.279)
Intercept 3	1.806* (0.192)	1.388* (0.273)	1.294* (0.276)	1.609* (0.189)	1.024* (0.282)	0.978* (0.283)
Intercept 4	2.730* (0.206)	2.306* (0.281)	2.215* (0.283)	2.530* (0.203)	1.939* (0.288)	1.895* (0.288)

* significant with 99% confidence
** significant with 95% confidence
***significant with 90% confidence

Figure 1
Available Parental Hours
Lone Parents and Couples



7. Conclusions

This paper asks whether economic resources matter for children's outcomes. Both economic theory and public concern over high levels of child poverty suggest that there is an important association. Yet, research utilizing the first wave of the National Longitudinal Survey of Children and Youth (1994) suggested, surprisingly, that low-income status is a relatively unimportant correlate of children's outcomes. If true, the policy implication is that income transfers are relatively unimportant for children.

The goal of this paper is to re-examine the association between economic resources and children's health and success at school. Although we recognize that the well-being of children is multi-dimensional, we limit ourselves in this paper to health and success at school as two particularly "economic" outcomes (i.e., they may be viewed as key elements of children's "human capital" and hence may be studied within the framework of economic models; both have important implications for children's eventual labour market success).

A key advantage of the 2nd wave of NLSCY data is that it allows us to move beyond *current* income and/or poverty status as a measure of the economic resources available to the child. Given the ups and downs of family income, particularly for lower-income families, a longer-term average should be a more reliable indication of family economic resources than any current year measure. It is also possible that the effects of economic resources only appear with a lag, hence it may be that previous year's income is more important than current income. Finally, it is also possible that duration of low-income status is important. We examine these hypotheses and conclude that for children's health status, current poverty status and two-period (i.e., longer-duration) poverty have the largest associations with current child health, though poverty matters regardless of the way in which we measure it. A two-period average of income has the largest association with child health. For success at school, it is clearly the longer-term poverty and the two-period average of income which have the largest associations.

However, economists would argue that wealth as well as income flows are also a vital component of the economic resources available to a family. While we do not have any direct information about family assets, we include a proxy for home ownership and for the state of repair of the

family dwelling. Finally, traditional economic reasoning also suggests that, income constant, families with more time are better off than those with less. When we control for both housing and available parental time per week, we find that children who live in owner-occupied housing have better outcomes than children who do not; children who live in housing in need of major repairs have worse outcomes. This represents an additional channel through which economic resources can influence outcomes for children. Weekly hours of parental time available has no statistically significant association with child health; however, income constant, more hours of parental time available each week significantly improves a child's success at school.

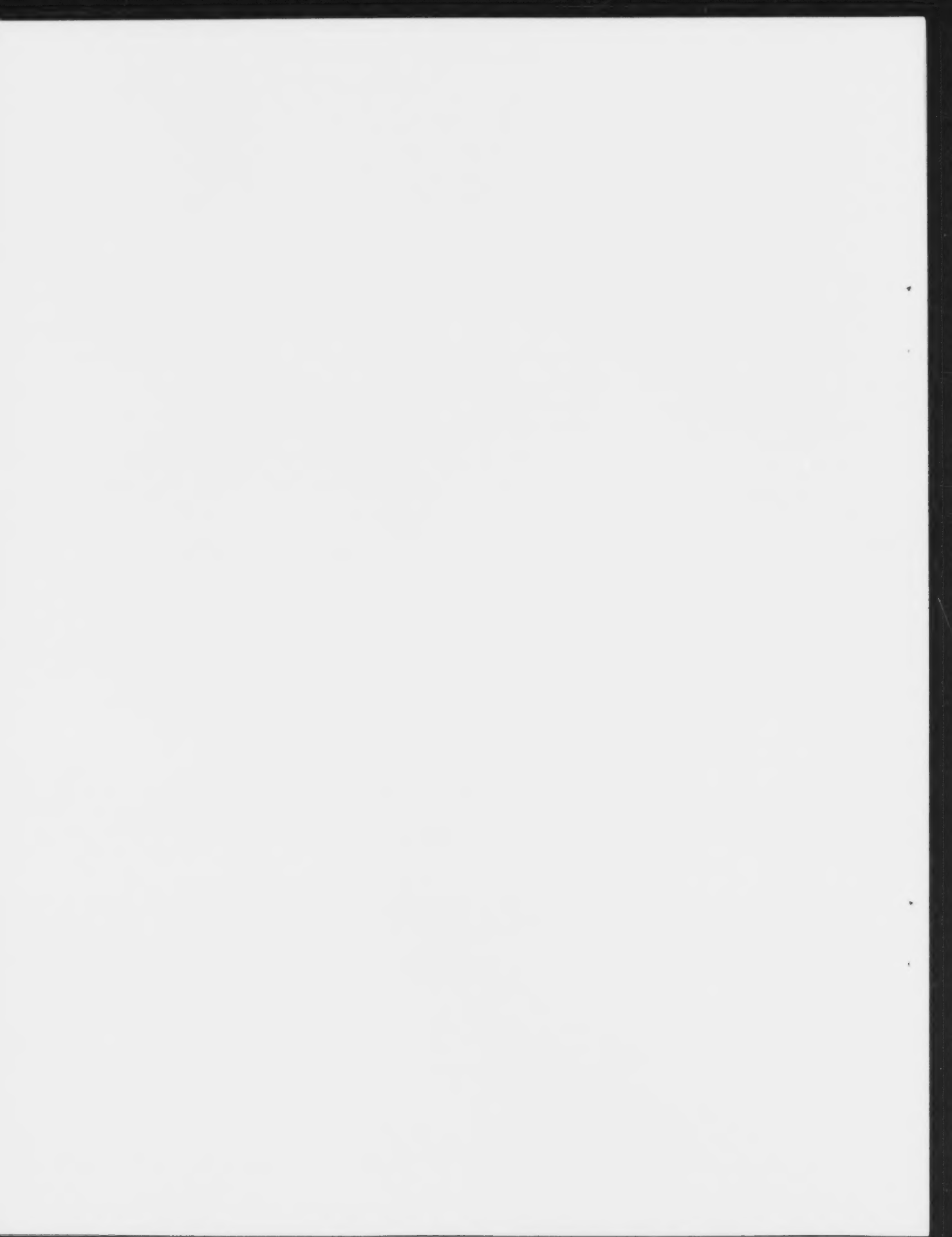
These results indicate that while "longer-term" income is an important factor in child well-being, measured by health and educational success, that other measures of economic resources are also important. The policy conclusions associated with "low or moderate association between income and child well-being may be misleading (for example Blau (1999) "*Policies that affect family income will have little direct impact on child development unless they result in very large and permanent changes in income.*" (P.261)). Income transfers may assist families with children to accumulate assets such as housing or increase parental time spent with children. These attributes are associated with better outcomes for children even after controlling for income. Other policy instruments may be extended parental leave, home ownership assistance plans or assisting low-income families with the completion of housing repairs.



Appendix

Table 1 Means for the Estimating Sample - Control Variables

PMK has less than high school education	12.1%
Age of the child	9.56
Child is female	49.1%
Lone parent household	17.7%
Number of children in the household	2.37
Age of the PMK	37.8
Number of observations	7337



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